

REMARKS

The Applicant thanks the Examiner for the careful examination of this application. The Applicant also thanks the Examiner for faxing the 11/26/03 Office Action, which contained page 4 of the Office Action that was missing from the Applicant's copy of the Office Action.

Claims 1-13 are currently pending and rejected. Claim 1 is amended hereinabove.

Independent Claim 1 positively recites that the transfer chamber module is operable to expose the semiconductor wafer to a vaporous solution. These advantageously claimed features are not taught or suggested by the patents granted to Emmi et al., Kato et al., or Mitani et al., either alone or in combination.

The Applicant respectfully traverses the assertion in the Office Action (paragraphs 4 and 5) that Emmi et al. teaches a "transfer chamber module operable to expose the semiconductor wafer to a vaporous solution" in column 7 lines 32-34 and column 8 lines 25-29. The Applicant submits that column 7 line 34 instead teaches that the chamber uses a gas, specifically a process gas. In addition, column 8 line 30 teaches that the chamber uses as gas, specifically HF gas.

The Applicant respectfully traverses the assertion in the Office Action (paragraph 5) that column 8 lines 35-36 "indicates that the module is structurally

capable of accommodating a vaporous solution" by its mention of chemical vapor deposition ("CVD"). As stated by Emmi et al. at the end of that sentence, CVD is a gas operation. The Applicant submits that the CVD process is fully gaseous (i.e. gas molecules are used in a chemical reaction to deposit a thin film or powder on the surface of the wafer). In addition, the Applicant submits that the CVD process is highly sensitive to the presence of any moisture (which is why it is often performed in a vacuum). In fact, sources of moisture are considered contaminants that are detrimental to the CVD process. A process chamber that is vapor clean capable would never be useable for CVD without - at minimum - replacing the chamber, controllers, and source lines. Therefore, the use of the CVD process within the tool taught in Emmi et al. is not the advantageously claimed invention.

Moreover, Emmi et al. teaches away from the advantageously claimed invention because Emmi et al. teaches the use of a pass-through tool (column 7 line 32, column 8 line 37, etc). Emmi et al. also teaches away from the advantageously claimed invention because Emmi et al. states that "placing the wafer in a fixed separate chamber or a fixed position within a transfer chamber...increases the cost, the processing time, and the space dedicated to the tool" (column 1 lines 35-39).

Kato et al. teaches that its chamber supplies only inert gas (column 5, lines 32-34; column 6, lines 3, 45, and 58). The Applicant submits that the differences between "inert gas" and "vaporous solution" are significant in the processing field of art. Therefore, the physical structure of the systems performing a gas process is significantly different than the physical structure of the systems performing a

vapor process. For example, the source for generating a vapor is a liquid but the source for gas is a gas cylinder. The monitoring, control, and tracking of vapor is different for gas at the source and also at the entrance to the process chamber. The composition of the pipes, the process chamber, and the handling materials within the process chamber are different for a vapor environment than a gas environment. The pump requirements within the process chamber for vapor (less stringent) are different than gas (more stringent). On the other side of the chamber, the removal mechanism for vapor (liquid removal) is different than inert gas (no removal issue). Corrosion issues are also very different for vapor than inert gas. Therefore, the Applicant respectfully submits that Kato et al. does not teach or suggest the advantageously claimed system.

The Applicant respectfully traverses the assertion in the Office Action (paragraph 9) that a chamber operable to expose the semiconductor wafer to a vaporous solution is a claim directed to the contents of the chamber. The Applicants submit that the noted claim language describes a condition of the structure and not a description of the "contents thereof". More specifically, the Applicants submit that a chamber operable to expose a wafer to vapor is different than a chamber operable to expose a wafer to gas (as described more fully above); therefore, the claim language --the transfer chamber module operable to expose the semiconductor wafer to a vaporous solution-- is of "significance in determining the patentability of the apparatus claim."

Mitani et al. describes a system for preparing an empty reaction chamber for future processing. Furthermore, the Applicant submits that Mitani's reaction

chamber can only perform gas processes (i.e. high temperature deposition of epitaxial or other silicon compounds), not vapor processes as advantageously claimed.

In addition, the Applicant submits that there is not suggestion or teaching to combine Mitani et al. with Kato et al. and Emmi et al. In fact it would be illogical to combine portions of a gas chamber (Emmi) with portions of a vacuum reserve chamber (Kato) and further with portions of a reaction chamber (Mitani). Furthermore, it would be illogical to combine portions of a pass-through chamber (Emmi) with a fixed chamber (Kato) – especially when Emmi teaches away from the use of a fixed chamber (as noted above). Moreover, if some combination of Emmi, Kato, and Mitani were created, the resultant hypothetical chamber would not teach or suggest the Applicants system because the structure of a chamber using process gas (Emmi) and/or inert gas (Kato) is not the same as the structure of the advantageously claimed chamber using vaporous solutions. Lastly, the Applicant knows of no chamber that can use both a gas source (Emmi, Kato, and Mitani) and a liquid/vapor source (the Applicant's chamber). As noted above the hardware, vacuum, and manufacturing environment are completely different for a chamber operable to expose a wafer to gas compared to a chamber operable to expose a wafer to vapor.

Therefore, the Applicant respectfully traverses the Examiner's rejection of Claim 1 and respectfully asserts that Claim 1 is patentable over Emmi et al., Kato et al., and Mitani et al.; either alone or in combination. Furthermore, Claims 2 – 7 are allowable for depending on allowable independent Claim 1 and, in

combination, including limitations not taught or described in the references of record.

Independent Claim 8 positively recites a plurality of outlets operable to discharge an amount of a vaporous solution into the chamber. These advantageously claimed features are not taught or suggested by the patents granted to Emmi et al., Kato et al., or Mitani et al., either alone or in combination.

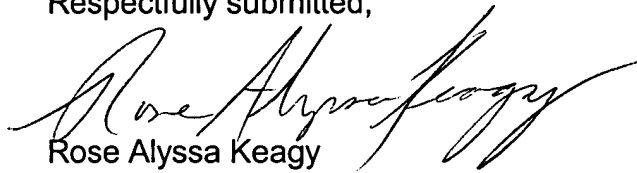
The Applicant submits that the cited art fails to teach all the structural limitations of the claim. The apparatuses of Emmi et al., Mitani et al., and Kato et al. are incapable of discharging a vaporous solution for numerous reasons described above. Also as described above, even if a hypothetical combination of Kato, Emmi, and Mitani were created, the resultant hypothetical chamber would not teach or suggest the Applicant's system because the structure and supporting hardware of a chamber using gas (Kato, Emmi, and Mitani) are not the same as the advantageously claimed chamber having outlets operable to discharge an amount of vaporous solution into a chamber.

Therefore, the Applicant respectfully traverses the Examiner's rejection of Claim 8 and respectfully asserts that Claim 8 is patentable over Kato et al., Emmi et al., and Mitani et al, either alone or in combination. Furthermore, Claims 9 – 13 are allowable for depending on allowable independent Claim 8 and, in combination, including limitations not taught or described in the references of record.

Lastly, the Applicant is confused by the Examiner's comments in paragraph 2 of the Office Action. This application has one inventor and one assignee; therefore, pointing out "the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made" seems nonsensical.

For the reasons stated above, this application is believed to be in condition for allowance. Reexamination and reconsideration is requested.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Rose Alyssa Keagy".

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